WHAT IS CLAIMED IS:

1   1.   A circuit arrangement for controlling audio signal transmissions for a

2   communications system that includes a microphone and a video camera, comprising:

3   a video processor configured and arranged to receive a video signal from the

4   video camera, detect movement of an object in the video signal, provide a motion-

5   indicating signal indicating movement relative to the object; and

6   an audio processor coupled to the video processor and configured and arranged to

7   modify the audio signal to be transmitted responsive to the motion-indicating signal.

1   2.   The circuit arrangement of claim 1, wherein the object is a person.

1   3.   The circuit arrangement of claim 1, wherein the object is a person's face.

1   4.   The circuit arrangement of claim 1, wherein the object is a person's mouth.

1   5.   The circuit arrangement of claim 1, wherein the audio processor is configured and

2   arranged to mute the audio signal to be transmitted responsive to the motion-indicating

3   signal.

1   6.   An echo-cancellation arrangement for a video communication system that

2   includes a microphone, a speaker, and a video camera for use by a video conference

3   participant at a first location, comprising:

4   a video signal processor configured and arranged to receive a video signal from

5   the video camera, detect mouth movement of the participant and provide a mouth-

6   movement signal indicative of movement of the participant's mouth;

7   an echo-cancellation circuit coupled to the video signal processor and configured

8   and arranged to filter from an audio signal provided by the microphone sound energy

9   output by the speaker responsive to the mouth-movement signal.

1   7.   The arrangement of claim 6, wherein the video signal processor includes:

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2   a background detector configured and arranged to distinguish a foreground

3   portion of an image from a background portion of the image;

4   a face detector coupled to the background detector and configured and arranged to

5   detect an image of the participant's face in the foreground portion and detect movement

6   of the participant's face; and

7   a mouth-movement detector coupled to the face detector and configured and

8   arranged to detect mouth movement in the image of the face and provide the mouth-

9   movement signal.

1   7.   The arrangement of claim 5 wherein the echo-cancellation circuit includes:

2   a double-talk detector configured and arranged to detect and generate a double-

3   talk signal in response to a received audio signal and a transmit audio signal;

4   a coefficient adapter coupled to the double-talk detector and to the video signal

5   processor and configured and arranged to generate filter coefficients responsive to the

6   double-talk and mouth-movement signals; and

7   a filter coupled to the adaptive processor.

1   8.   A video communication arrangement with video-assisted echo-cancellation, the

2   arrangement for use by a video conference participant at a first location, comprising:

3   a microphone;

4   a speaker;

5   a video camera arranged to provide a video signal;

6   a video signal processor coupled to the video camera and configured and arranged

7   to detect mouth movement of the participant in the video signal and provide a mouth-

8   movement signal indicative of the participant speaking;

9   an echo-cancellation circuit coupled to the microphone, speaker, and video signal

10 processor and configured and arranged to filter, responsive to the mouth-movement

11 signal, from an audio signal provided by the microphone sound energy output by the

12 speaker;

13   a video display device;

14   a channel interface;

15   a multiplexer coupled to the channel interface, the echo-cancellation circuit, and

16   the video signal processor, and configured and arranged to provide audio and video

17   signals as output to the channel interface; and

18   a demultiplexer coupled to the channel interface, the echo-cancellation circuit, the

19   video display device, and the speaker, and configured and arranged to provide audio and

20   video signals.

1   10.   The arrangement of claim 8, wherein the video signal processor includes:

2   a background detector configured and arranged to distinguish a foreground

3   portion of an image from a background portion of the image;

4   a face detector coupled to the background detector and configured and arranged to

5   detect an image of the participant's face in the foreground portion and detect movement

6   of the participant's face; and

7   a mouth-movement detector coupled to the face detector and configured and

8   arranged to detect mouth movement in the image of the face and provide the mouth-

9   movement signal.

1   11.   The arrangement of claim 10, wherein the echo-cancellation circuit includes:

2   a double-talk detector configured and arranged to detect and generate a double-

3   talk signal in response to a received audio signal and a transmit audio signal;

4   a coefficient adapter coupled to the double-talk detector and to the video signal

5   processor and configured and arranged to generate filter coefficients responsive to the

6   double-talk and mouth-movement signals; and

7   a filter coupled to the adaptive processor.

1   12.   The arrangement of claim 8, wherein the echo-cancellation circuit includes:

2   a double-talk detector configured and arranged to detect and generate a double-

3   talk signal in response to a received audio signal and a transmit audio signal;

4   a coefficient adapter coupled to the double-talk detector and to the video signal

5   processor and configured and arranged to generate filter coefficients responsive to the

6   double-talk and mouth-movement signals; and

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7   a filter coupled to the adaptive processor.

1   13.   A method for audio signal and video signal processing, comprising:

2   receiving a video signal from a video camera;

3   receiving an audio signal from a microphone;

4   detecting movement of an object in the video signal;

5   providing a motion-indicating signal to an audio signal processor when movement

6   of the object is detected;

7   modifying the audio signal in response to the motion-indicating signal.

1   14.   The method of claim 13, wherein the object is a person.

1   15.   The method of claim 13, wherein the object is a person's face.

1   16.   The method of claim 13, wherein the object is a person's mouth.

1   17.   The method of claim 13, wherein the object is a person's mouth.

1   18.   The method of claim 13, further comprising providing a muted audio signal when

2   no motion is detected.

1   19.   A method for audio signal and video signal processing, comprising:

2   receiving a video signal from a video camera;

3   receiving an audio signal from a microphone;

4   detecting movement of a person's mouth in the video signal;

5   providing a motion-indicating signal to an echo-cancellation circuit when

6   movement is detected; and

7   modifying filter coefficients in response to the motion-indicating signal.

1   20.   The method of claim 19, further comprising:

2   detecting a foreground portion of an image in the video signal;

3 detecting a face in the foreground portion of the image; and

4 detecting a mouth on the face.

1 21. An apparatus for audio signal and video signal processing, comprising:

2 means for receiving a video signal from a video camera;

3 means for receiving an audio signal from a microphone;

4 means for detecting movement of a person's mouth in the video signal;

5 means for providing a motion-indicating signal to an echo-cancellation circuit

6 when movement is detected; and

7 means for modifying filter coefficients in response to the motion-indicating

8 signal.